

## • CLAIMS

1. An optical fiber having at least one Bragg grating, the fiber comprising a core surrounded in succession by cladding and a coating, said fiber being obtained by writing said grating directly in the core and/or the cladding through the coating which is made of a material containing an organic substance that is substantially transparent to the ultraviolet radiation used for writing said grating, wherein the material of said coating contains an inorganic substance that is not miscible with the organic substance and that is distributed in substantially uniform manner in said material.
2. An optical fiber having at least one Bragg grating according to claim 1, in which the inorganic substance is selected from a mineral filler, and a reinforcing agent, and preferably contains particles of mean grain size smaller than one-twentieth the wavelength of said radiation used for writing.
3. An optical fiber having at least one Bragg grating according to claim 1, in which the inorganic substance is silica, preferably pyrogenic silica.
4. An optical fiber having at least one Bragg grating according to claim 1, in which said material comprises up to 30% by weight of inorganic substance, and when the organic substance contains silicone, the material comprises 1.2% to 5% by weight of the inorganic substance and preferably about 2.75%.
5. An optical fiber having at least one Bragg grating according to claim 1, in which the Bragg grating presents contrast of  $7.4 \times 10^{-4}$  for a grating of length 1 mm and contrast of  $2.3 \times 10^{-4}$  for a grating of length 5 mm.

- 6. An optical device incorporating a fiber having a Bragg grating as defined in any one of claims 1 to 5.
- 7. A method of manufacturing an optical fiber having at least one Bragg grating, the fiber comprising a core surrounded successively by cladding and by a coating, said fiber being obtained by writing said grating directly in the core and/or the cladding through the coating which is made out of a material containing an organic substance that is substantially transparent to the ultraviolet type radiation used for writing said grating, said method including a step of forming said coating on the cladding and a step of writing said grating in the core and/or the cladding through said coating by using a source of writing radiation, in which the step of forming the coating comprises:
  - preparing a settable mixture containing said inorganic substance and a liquid organic substance containing at least one polymer precursor that is settable;
  - applying the settable mixture on said cladding as a single layer; and
  - causing the settable mixture to set so as to form said material.
- 8. A method of manufacturing an optical fiber having at least one Bragg grating according to claim 7, in which the step of writing said Bragg grating is performed statically.
- 9. A method of manufacturing an optical fiber having at least one Bragg grating according to claim 7, in which the polymer precursor is selected from a silicone precursor that is thermosetting and a silicone precursor that is photosetting.